SONY®

U-matic SP type **IX**

U-matic Videocassette Recorder
VO-9850
(EIA/NTSC)

SP U-matic—A Format for Program Origination

Sony's U-matic, a worldwide standard format in the professional video field, has made another big step forward. The new U-matic editing VTR, the VO-9850, is the result of Sony's intensive research and accumulated expertise.

The VO-9850, from the Type 9 series of Sony's U-matic family, provides an excellent quality picture in every parameter used to determine total picture quality thanks to the adoption of the SP format. It also ensures high quality dubbing for multi-generation recordings. Sound quality is greatly improved by the adoption of the Type C Dolby* NR circuit. As always seen in Sony's new product development, the VO-9850 maintains format compatibility and system consistency with current U-matics. In other words, it can merely be added to current Sony editing systems with no modification. The optional BKU-705 Time Code Generator/Reader Board and a built-in 9-pin REMOTE interface (RS-422 serial) enable highly accurate and flexible editing operations.

With its outstanding cost performance, the VO-9850 Type 9 U-matic editing VTR will be an indispensable tool for professional video users.

Video System

Superior Picture Quality

The VO-9850 is the new generation of editing U-matic from Sony. The SP U-matic technology, in which the FM carrier frequencies for luminance signal modulation are shifted up 1.2MHz from the conventional U-matic video format, was developed to achieve an overall quality improvement. The VO-9850 offers not only 330 TV lines of horizontal resolution but also greatly reduces luminance and chrominance ringing while maintaining a high signal to noise ratio. As a result, the VO-9850 provides an improved multi-generation recording capability. The VO-9850 can transmit luminance and chrominance signals separately through a DUB connector for minimum picture degradation caused by dubbing.

Complete Interchangeability between SP and Conventional U-matic

The SP U-matic format is interchangeable with the conventional U-matic format. Therefore, conventional U-matics can playback high quality SP recorded pictures, and SP U-matics can improve the picture quality of conventional recordings.

SP Mode Automatic Detection System

SP Videocassettes (KSP series) achieve the highest possible U-matic picture quality when used with SP U-matics in the SP mode. KSP series videocassettes have two detection holes. When SP U-matics detect these holes in the recording mode, they automatically switch to the SP recording mode. In the playback mode, SP U-matics detect which FM carrier frequencies are used for luminance signal modulation. Once the SP format is detected, SP U-matics automatically switch to the SP playback mode.

Audio System

Superior Audio Quality

The VO-9850 adopts new sendust heads and new audio circuits for superior audio quality. The frequency response is improved to 50Hz~15kHz ±3dB, and the S/N ratio is improved to 52dB.

Type-C Dolby Noise Reduction System

The type-C Dolby Noise Reduction System improves the S/N ratio to 72dB (measured by the CCIR/ARM filter, r.m.s.) and works only in SP recording/playback modes. The Dolby NR can be selected by the Dolby ON/OFF switch in the SP recording mode. When in the Dolby ON mode, the Dolby NR pilot signal is recorded on to the audio channels along with the audio signals. In the playback mode, the VO-9850 automatically activates the Dolby NR system when the Dolby NR pilot signal is detected.
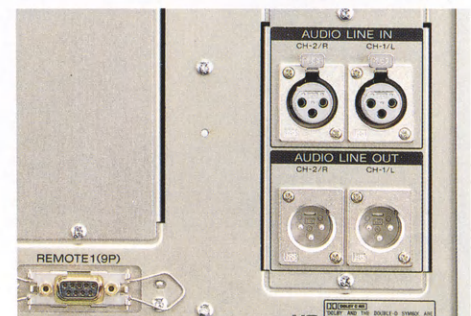
XLR Connectors

The VO-9850 provides audio XLR connectors to work with professional audio equipment and for stable transmission of audio signals.
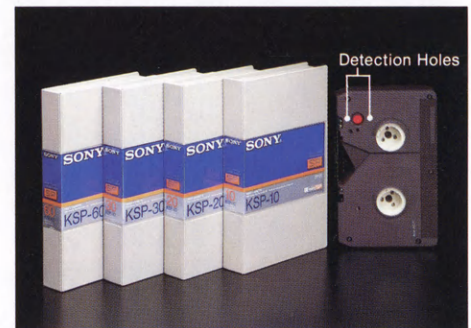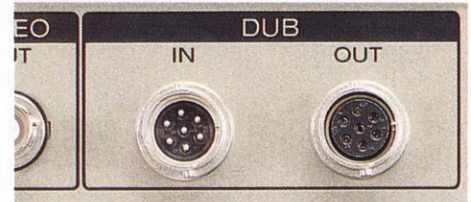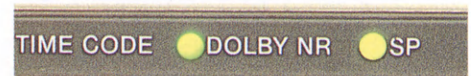
KSP Videocassette
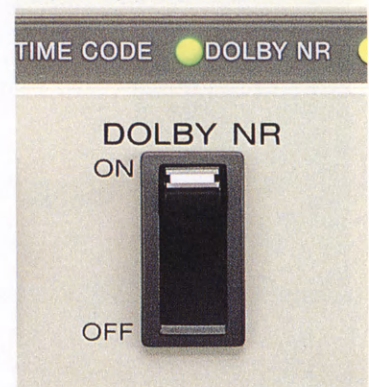
Dolby ON/OFF switch

XLR Connectors

Time Code Capability with BKU-705 Time Code Generator/Reader (optional)

An optional Time Code Generator/Reader board, the BKU-705, can be installed into the VO-9850. This allows it to read and generate time codes without an external time code generator/reader. An optional Time Code Reader, the BKU-704, can also be used in the VO-9850.
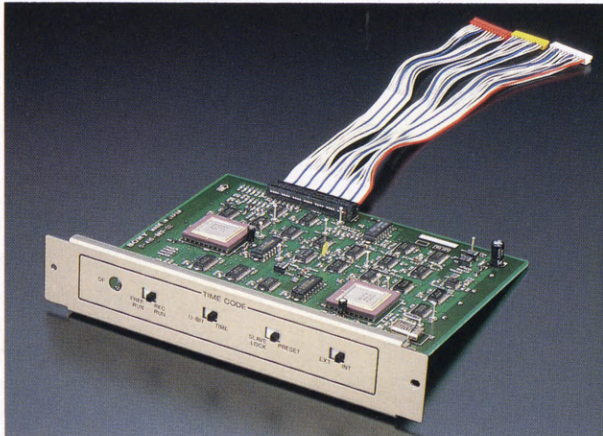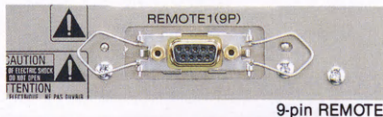

BKU-705

Main Features of BKU-704/705

- Can read SMPTE time code (BKU-704/705)
- Can generate and set SMPTE time code (BKU-705)
- User bits, drop/non-drop frame code, phase correction bit, and binary group flag bit can be set via the Dial Menu Operation. (BKU-705)
- Free-run/rec-run mode can be selected via a switch. (BKU-705)
- Time code or user bits can be superimposed on the video signal (monitor output) via the Dial Menu Operation. (BKU-704/705)
- Regeneration capability to an external time code or the one previously recorded on the tape. (BKU-705)
- Easy installation (BKU-704/705)

Versatile System Interface

9-pin REMOTE Connector (RS-422 serial interface)

The VO-9850 provides a 9-pin REMOTE connector (RS-422 serial interface) for editing with the RM-450 Editing Control Unit.

9-pin REMOTE

BKU-703 33-pin Editing Interface (optional)

The BKU-703 33-pin parallel interface board can be installed into the VO-9850 for connection with the RM-440 Editing Control Unit and current 33-pin remote control units such as the RM-500, RM-580, and RM-555.

BKU-703

TBC Connection

The VO-9850 provides EXT SYNC IN, SC IN, and RF OUT (OFF TAPE) for connection with an external time base corrector such as the BVT-810. When a TBC is used, the TBC/NORMAL/EDIT switch on the VO-9850 has to be set to the TBC mode. The connection with TBC offers highly stable signal output in the VO-9850.
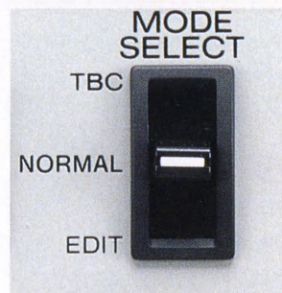
TBC/NORMAL/EDIT switch

Editing Facility

Full Editing Capability

• Assemble and Insert (V/A1/A2) Editing Modes

Independent editing of video, channel 1 audio or channel 2 audio is possible in the insert edit mode. The VO-9850 ensures a clean edit at each edit in and out point.

Note: If the videocassette is a non-SP recording, even if the

videocassette is an SP videocassette, the VO-9850 will perform the edit in the conventional recording mode.

• Time Code Based Editing
When the BKU-705 Time Code Generator/Reader board is installed into the VO-9850, time code based editing can be executed. When the VO-9850 is used as a player, the BKU-704 Time Code Reader can be used for Time Code Editing.

• Controlled via the RM-450
The RM-450 can effectively handle editing functions, such as editing IN-POINT/OUT-POINT ENTRY, PREVIEW, TRIM, AUTO EDIT/END, REVIEW/JUMP, GO TO, AUDIO SPLIT, and LAST EDIT. When the BKU-705 is installed into the VO-9850, time code information is available through the 9-pin REMOTE connector. The combination of the VO-9850/9800 and RM-450 creates an ideal time code editing system.

• Controlled via the RM-440
With the optional BKU-703 33-pin Editing Interface board, the VO-9850 can be connected to the RM-440 for editing with the current VO-5850/5800 U-matic VTRs.

High Speed Picture Search

SHUTTLE MODE
The search dial on the VO-9850 can offer various speeds, still, $1/30$, $1/10$, $1/5$, $1/2$, 1, 2, 5, or 8 times normal speed in both the forward and reverse directions. In the still mode, noiseless still pictures, on which the guard band noise is located on the upper or bottom part of the monitor screen, is available. (On/off selectable via Dial Menu Operation.)

JOG MODE
In the JOG mode, accurate frame by frame search in both directions, as directed by the rotation of the search dial, is possible.

Dial Menu Operation

The Dial Menu Operation provides maximum operational conveniences, such as:
- setting of the time code or user bits of the BKU-705
- display of time codes/user bits
- selection of character size and position
- display of self-diagnostic results
- display of digital hour meter information
- setting of STILL TIMER (i.e. the length of time in still mode before releasing tape tension)
- setting preroll time
- selection of search dial operational modes (Direct or via Search Button)

and much more. The operation can be done while viewing the monitor or LED time counter.
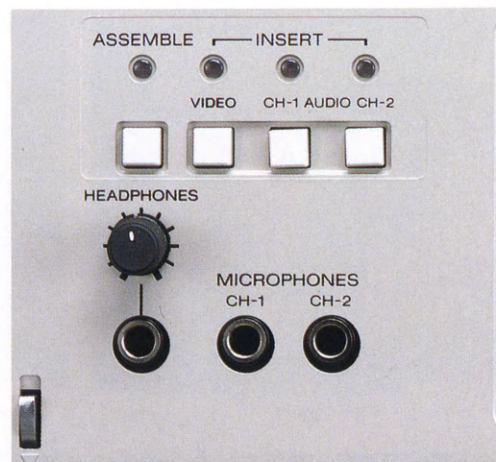
RM-450
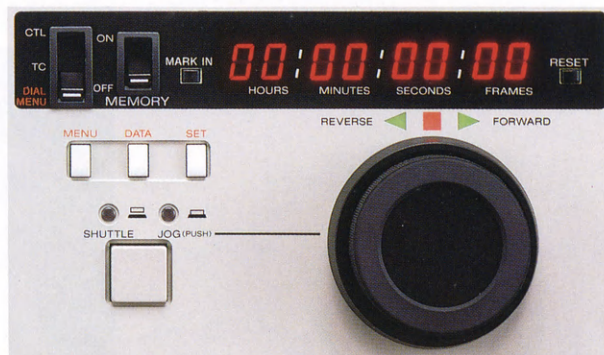
Search Dial

STILL TIMER

DIGITAL HOUR METER

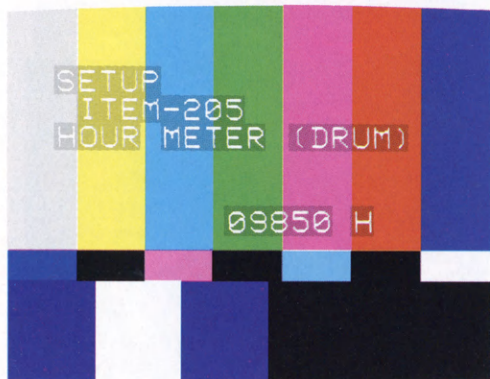# Improved Reliability and Serviceability

STILL TIMER (Anti-clog Facility)

The STILL TIMER is provided to prevent tape and head damage occuring during long term STILL. When the STILL mode has been on for more than 8 minutes, the VO-9850 automatically moves into the LONG PAUSE mode. The STILL TIMER can be set to sixteen different steps from 0.5 seconds to 8 minutes via the Dial Menu Operation.

Digital Hour Meters

Digital Hour Meter 1: the accumulated time that the tape has been threaded around the video head drum

Digital Hour Meter 2: the accumulated time that the power of the VO-9850 has been on

Both meters can count up to 15,000 hours. The time is simply obtained via the SEARCH DIAL and displayed on the monitor and LED time counter.

Self Diagnostics

Service time for the VO-9850 is kept to a minimum via the self-diagnostic function. The self-diagnostic function is provided in the Dial Menu Operation and can be displayed on the monitor and LED time counter.

User Friendly Installation

5 Units High

The VO-9850 is 5 units high and maintains this compactness even when the time code board is installed.

19 inch EIA Rack Mountable

When the VO-9850 is installed into a 19 inch EIA standard rack or the SONY SU rack, the RMM-501 Rack Mount Kit, which is the same as that for the VO-5850/5800 series U-matics, can be used.

Hinged Front Panel

The VO-9850's front panel can be slanted at a 0°, 30°, 60°, or 90° angle for operational convenience.

33-pin Editing Interface
BKU-703
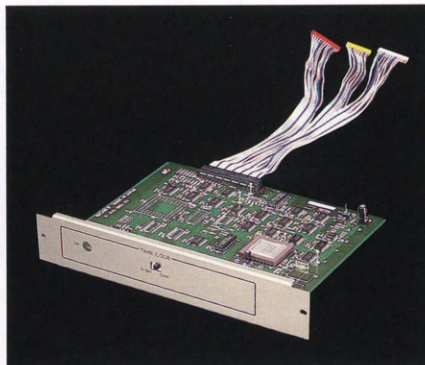
Time Code Reader
BKU-704

Editing Remote Control Unit
RM-450
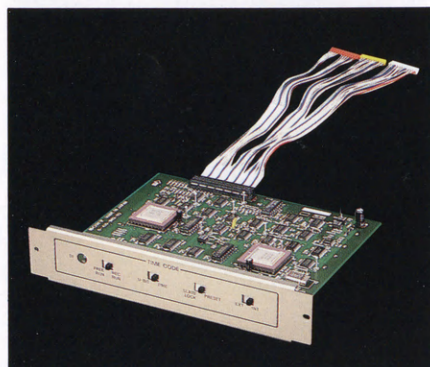
Time Code Generator/Reader
BKU-705

Rack Mount Kit
RMM-501

SP U-matic Videocassette
KSP-10/20/30/60, KSP-S10/S20
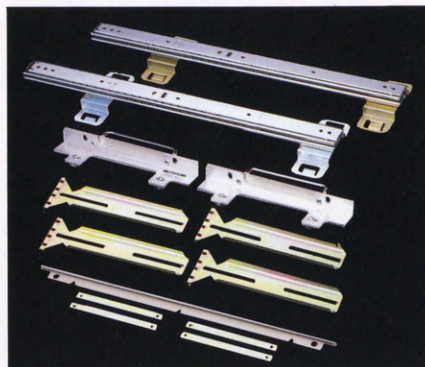
9-pin Remote Cable
RCC-5G/10G/30G
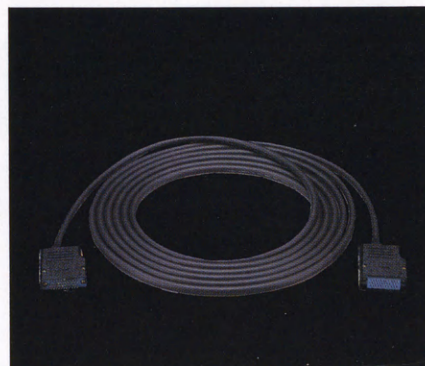
33-pin Remote Cable
RCC-5F

U-matic Videocassette
**KCA-10/20/30/60 BRS,
KCS-10/20 BRS,
KCA-10/20/30/60 XBR**

Dubbing Cable
VDC-5

BASIC SYSTEM CONNECTIONS

Example (1) Time code based editing system

VO-9800 with BKU-704

VO-9850 with BKU-705

VIDEO or DUB
(UGC) (VDC-5)

AUDIO CH-1/2
(EC-10XLR)

9-pin REMOTE
(RCC-5G)

9-pin REMOTE
(RCC-5G)

RM-450
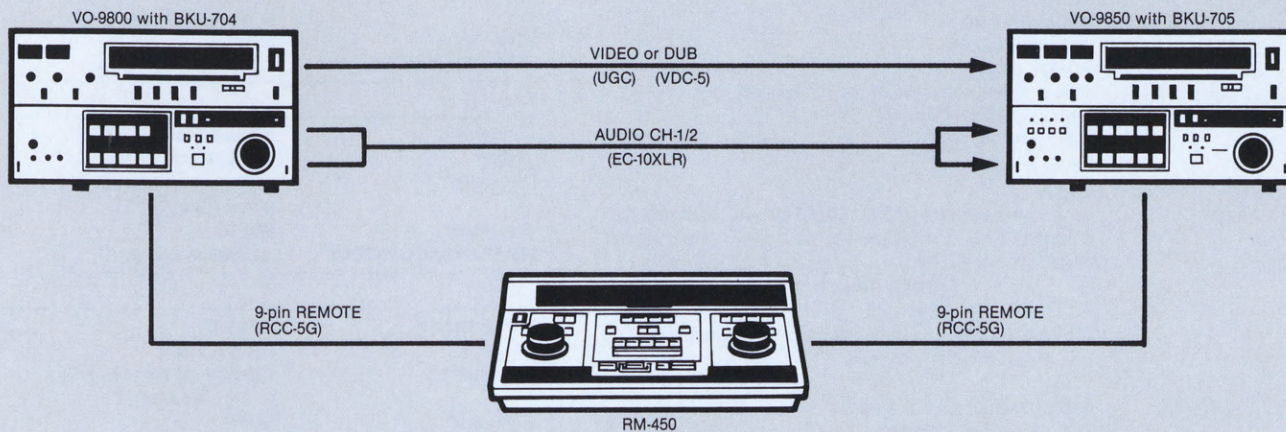
Example (2) CTL based editing system

VO-9800

VO-9850

VIDEO or DUB
(UGC) (VDC-5)

AUDIO CH-1/2
(EC-10XLR)

9-pin REMOTE
(RCC-5G)

9-pin REMOTE
(RCC-5G)

RM-450
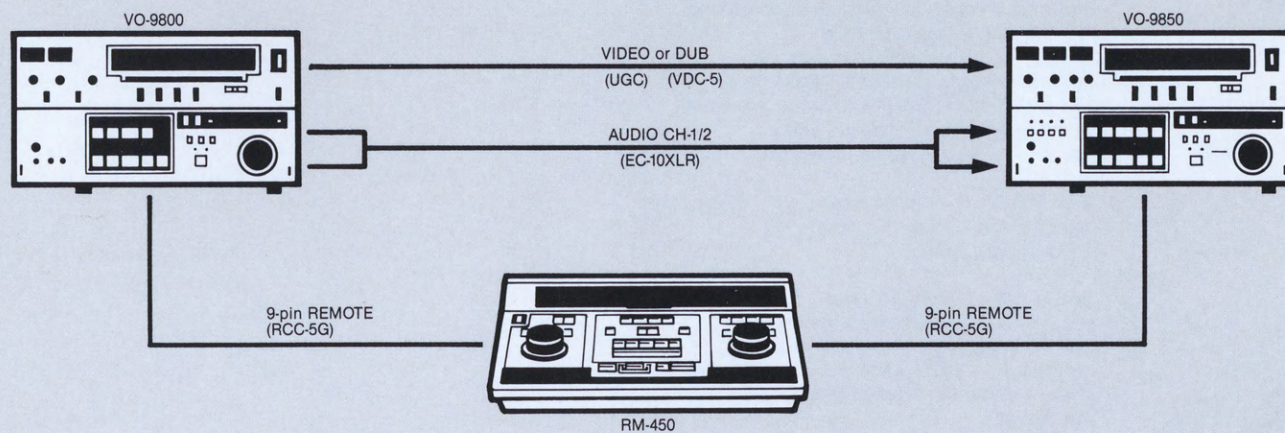
Example (3)
Editing system with the VO-5800/5850

VO-5800/5850

VO-9850

VIDEO or DUB
(UGC) (VDC-5)

AUDIO CH-1/2
(RK-5XLRM)

33-pin REMOTE
(RCC-5F)

9-pin REMOTE
(RCC-5G)

RM-450
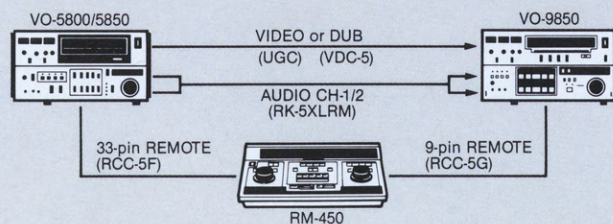
Example (4)
Editing system with the VO-5800/5850

VO-5800/5850

VO-9850 with BKU-703

VIDEO or DUB
(UGC) (VDC-5)

AUDIO CH-1/2
(RK-5XLRM)

33-pin REMOTE
(RCC-5F)

33-pin REMOTE
(RCC-5F)

RM-440

FRONT PANEL

SONY

VIDEOCASSETTE RECORDER VO-9850 U-matic SP

POWER — ON / OFF

CH-1 AUDIO LEVEL CH-2   VIDEO LEVEL   TRACKING

AUDIO LIMITER — ON / OFF   AUTO / MANUAL   FIXED

AUTO OFF   STANDBY   TIME CODE   DOLBY NR   SP

AUDIO MONITOR — CH-1 / MIX / CH-2   INPUT SELECT — LINE / DUB   MODE SELECT — TBC / NORMAL / EDIT   DOLBY NR — ON / OFF   SKEW   REMOTE / LOCAL

ASSEMBLE — INSERT — VIDEO CH-1 AUDIO CH-2

HEADPHONES   MICROPHONES CH-1 CH-2

EJECT   PREROLL   REC   EDIT   CUT OUT
SERVO
STOP   REW   PLAY   F.FWD   PAUSE

CTL / TC   ON / OFF   MARK IN   MEMORY
DIAL MENU

0:00:00:00
HOURS MINUTES SECONDS FRAMES   RESET

MENU   DATA   SET

REVERSE ◀ ■ ▶ FORWARD

SHUTTLE   JOG (PUSH)

REAR PANEL

VIDEO 1 IN 2 75 Ω OFF ON   SC IN   SYNC IN   RF (OFF TAPE)   VIDEO OUT   DUB IN OUT   MONITOR TV VIDEO AUDIO   TIME CODE IN OUT

~ AC IN

SONY MODEL VO-9850
VIDEOCASSETTE RECORDER
AC 120V 60Hz   W
Sony Corporation
Made in Japan
1015

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
ATTENTION
RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR

REMOTE 1 (9P)

AUDIO LINE IN
CH-2/R   CH-1/L

AUDIO LINE OUT
CH-2/R   CH-1/L

SPECIFICATIONS

VO-9850

GENERAL

Weight:	21.4 kg (47 lb 2 oz)
Dimensions:	426(W) × 238(H) × 513(D)mm (16 $^7/_8$ × 9 $^3/_8$ × 20 $^1/_4$″)
Power requirements:	AC 120V, 50/60Hz
Operating voltage:	AC 90~132V
Power consumption:	90W (with BKU-703, BKU-705, and RM-440)
Operating temperature:	5°C~40°C (41°F~104°F)
Videocassette:	SONY KSP, KSP-S, KCA-BRS, KCS-BRS, KCA-XBR, KCS-XBR series or equivalent
Recording and playback time:	60 min.
Fast forward time:	Less than 4 min. (with SONY KSP-60 U-matic videocassette)
Rewind time:	Less than 4 min. (with SONY KSP-60 U-matic videocassette)
Search speed:	SHUTTLE mode: STILL, $^1/_{30}$, $^1/_{10}$, $^1/_5$, $^1/_2$, 1, 2, 5, 8 times normal speed in the forward and reverse directions
	JOG mode: STILL to normal speed in the forward and reverse directions

VIDEO

Video recording system:	Rotary 2-head helical scan system Luminance: FM recording Chrominance: SC low-range conversion recording
Input:	NTSC composite video, 1.0Vp-p ±0.3V, sync negative, 75 ohms, unbalanced
Output:	NTSC composite video, 1.0Vp-p ±0.2V, sync negative, 75 ohms, unbalanced
Dubbing input:	7-pin × 1
Dubbing output:	7-pin × 1
Horizontal resolution:	SP mode: 330 lines (color/monochrome) Conventional mode: 250 lines (color/monochrome)
S/N ratio:	SP mode: Better than 46dB (color) Better than 48dB (monochrome) Conventional mode: Better than 46dB (color)
EXT SYNC IN:	2.5V (1.0~5.0V)p-p, negative, 75 ohms, unbalanced
SC IN:	1.0V (0.5~3.0V)p-p, 75 ohms, unbalanced
RF OUT (OFF TAPE):	0.5V (0.3~1.0V)p-p, 75 ohms, unbalanced

TIME CODE

Input:	0dB±6dB, 10k ohms, unbalanced (0dB=1.55Vp-p pulse)
Output:	0dB±3dB, low impedance, unbalanced (0dB=1.55Vp-p pulse)

AUDIO

Input:	Line: +4dB, 10k ohms, balanced Microphone: −60dB, 3k ohms, unbalanced
Output:	Line: +4dBm (at 600 ohms), balanced Headphone: −26dB~−46dB (at 8 ohms), unbalanced Monitor: −5dB (at 47k ohms), unbalanced
Distortion:	Less than 2%
Frequency response:	50Hz~15kHz
Wow and Flutter:	Less than 0.18% rms
S/N ratio:	SP mode: Better than 52dB (3% distortion without Dolby NR) Conventional mode: Better than 50dB (3% distortion)

SUPPLIED ACCESSORIES	Operation manual (1) AC cord (1)

BKU-703

Connectable to:	VO-9800/9850
Weight:	230 g (8.1 oz)
Dimensions:	63(W) × 109(H) × 64(D)mm (2 $^1/_2$ × 4 $^3/_8$ × 2 $^5/_8$″)
Connector:	33-pin
SUPPLIED ACCESSORY	Installation manual (1)

BKU-704

Connectable to:	VO-9800/9850
Weight:	190 g (6.3 oz)
Dimensions:	199(W) × 41(H) × 145(D)mm (7 $^7/_8$ × 1 $^5/_8$ × 5 $^3/_4$″)
Time code:	SMPTE
SUPPLIED ACCESSORY	Installation manual (1)

BKU-705

Connectable to:	VO-9850
Weight:	200 g (7.1 oz)
Dimensions:	199(W) × 41(H) × 145(D)mm (7 $^7/_8$ × 1 $^5/_8$ × 5 $^3/_4$″)
Time code:	SMPTE
Drop/Non-drop frame:	Selectable
SUPPLIED ACCESSORY	Installation manual (1)

Design and specifications subject to change without notice.
*Dolby and ▯▯ are trademarks of Dolby Laboratories Licensing Corporation.

Distributed by